in 1876, directed attention to the importance of Fuchs's then recent publications. How true was his forecast, that "they must form the basis of all future inquiries on this part of the subject," the history of the years that followed has fully shown.

Fuchs was born at Moschin (Posen), May 5, 1833; he became extraordinary professor at Berlin in 1866, ordinary professor at Greifswald in 1869, at Göttingen in 1874, at Heidelberg in 1875, and finally at Berlin in 1884. G. B. M.

CARLO RIVA.

ITALIAN geology has sustained a heavy loss in the death of the young and accomplished Docent in petrography and Assistant in the mineralogical laboratory of the University of Pavia, Dr. Carlo Riva, who was killed by an avalanche on the 3rd inst. while ascending Monte Grigna. Besides contributing descriptions of various Italian minerals, he specially interested himself in the study of the volcanic rocks of Italy, and in conjunction with his friend G. de Lorenzo he had been for some time engaged in a detailed investigation of the volcanic cones and rocks of the "Campi Phlegræi." The first fruits of this conjoint labour appeared a year or two ago in a monograph on the remarkable but seldom visited cone of the island of Vivara, which was noticed in NATURE last year. Never before had such a combination of geological and petrographical skill been devoted to any of the old volcanoes of that classic district, so that geologists who had seen the memoir looked forward with much interest to the application of the same talents to the other cones. It is understood that the account of Astroni was far advanced towards completion. But all this bright promise of a career that would have advanced the cause of science and shed lustre on the scientific work of Italy has been abruptly quenched. Those who knew Carlo Riva personally will keenly feel the untimely extinction of a nature so gentle and kindly, so enthusiastic and unwearying in pursuit of science, so full of power and yet so modest and retiring. He has died a martyr to the energy with which he followed his favourite studies, and carries with him to the grave the respect and affection of a wide circle of friends.

A. G.

NOTES.

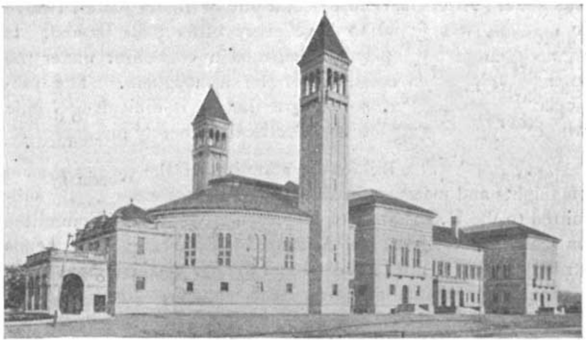
THE Prince and Princess of Wales were present at the Royal Institution on Friday last when Sir Benjamin Baker delivered a lecture on "The Nile Dams and Reservoir." Before the lecture several striking experiments were shown to their Royal Highnesses by Lord Rayleigh, Sir William Crookes, Prof. Dewar and Prof. Macfadyen.

THE Rome correspondent of the *Daily Mail* announces that the Accademia dei Lincei has decided to give Mr. Marconi a prize of 400*l.* as a reward for his work with wireless telegraphy. From the same source we learn that Mr. Pierpont Morgan has presented a set of cut precious stones, valued at 2000*l.*, to the museum of the Jardin des Plantes, at Paris.

SEVERAL correspondents have sent to the daily papers accounts of the fall of a yellow powder on June 1 and 2 during a thunderstorm. At Great Yeldham, in Essex, and at Langport, Somerset, this yellow sediment was found after the storm had subsided, and was thought to be sulphur. Mr. C. Turner has, however, pointed out in the *Times* that the substance supposed to be sulphur is in reality the pollen from pine trees. This is often produced in large quantities and has many times been mistaken in country places for "showers of sulphur."

MR. F. FINN sends us from Calcutta an account of colour variation in a family of pigeons which have sprung from a pair of homing pigeons imported from England last year. "Of the original pair," he says, "the cock is a blue chequer and hen a silver chequer. None, however, of their descendants have been silver, but all blue chequers, with the exception of one, a blue almost exactly resembling the wild *Columba livia*, but with no white on the back. As against this one case of reversion, there have been two of progressive variation; for two birds, grandchildren of the original pair, though of different broods, show white in the tail, though their parents and grandparents had none." A naturalist to whom the observations have been shown remarks:—"The production of white feathers in the tail I should hardly regard as a case of progressive variation. It is more probably a reversion to some previous ancestor. Homing pigeons are not bred for colour, and it is almost certain that some of the ancestors of the pair sent would have had white feathers in the tail."

AT the forthcoming meeting of the American Association at Pittsburg, several of the sections and affiliated societies will meet in the Carnegie Institute, where the offices and reception room of the Association will also be situated. The accompanying view of the Institute is reproduced from the preliminary programme of the meeting. The local committee is a large one and contains many leading men and women connected with Pittsburg; Mr. George Westinghouse, jun., is the president. It is noteworthy as evidence of sympathy with scientific efforts that the following resolutions were adopted unanimously on March 24 by the Federation of Churches at Pittsburg, Allegheny and vicinity:—"Inasmuch as all truth is one and is divine and inasmuch as all organisations for its conservation and propagation are kindred, the Federation of Churches of Pittsburg, Allegheny and vicinity records its pleasure in the fact that the American Association for the Advancement of Science is to hold its anniverary in Pittsburg this year. In behalf of the churches we desire a large and representative meeting here of the seers and prophets of science. In behalf of those interested in the advancement of education and knowledge we extend to them a hearty welcome."



Carnegie Institute, Pittsburg.

THE seventh annual congress of the South-Eastern Union of Scientific Societies, held at Canterbury on June 5–7, was as successful as any of the preceding ones. Thirty-seven societies are now affiliated to the Union, a slight increase on last year; the accounts showed a small balance, and the attendance was good. An invitation to meet at Dover next year was accepted, and Sir Henry Howorth, F.R.S., was elected president for that meeting. Papers were read on "The Marine Aquarium," by Mr. Sibert Saunders, and on "Mycorhiza," by Miss A. Lorrain Smith; Prof. Poulton gave a lecture on "Recent Researches on

Mimicry in Insects," illustrated by lantern-slides in natural colours; a discussion on the measures to be adopted for the preservation of our indigenous flora was initiated by Prof. Boulger and Mr. E. A. Martin; and papers on "Well-sections," by Mr. Whitaker, and on "Eolithic Flint Implements," by Mr. E. R. Harrison, were taken as read, but will appear in *The South-Eastern Naturalist* for 1902. The event of the meeting, however, was the address by the president, Dr. Jonathan Hutchinson, F.R.S., on leprosy, with special reference to its antiquarian aspects, with reasoned argument against the theory of contagion. The congress was held, by permission of the governors, in the Simon Langton Schools, where an excellent local museum had been got together, including marine aquaria exhibited by Mr. Saunders, Mr. Harrison's eoliths, and many fresh specimens of the British orchids, so well represented in the district. The members visited the Cathedral, and were entertained at the deanery by the Dean and Mrs. Farrar, and were also received, on the Friday evening, by the Mayor and Mayoress. The congress terminated on the Saturday afternoon in a visit to the South-Eastern Agricultural College, Wye, at the invitation of the principal, Prof. A. D. Hall, where the members were shown over the farms and laboratories by the staff of the college.

A CURIOUS effect produced by lightning is described to us by Dr. Enfield, writing from Jefferson, Iowa, U.S. A house which he visited was struck by lightning so that much damage was done. After the occurrence, a pile of dinner plates, twelve in number, was found to have every other plate broken. It would seem as if the plates constituted a condenser under the intensely electrified condition of the atmosphere. The particulars are, however, so meagre that it is difficult to decide whether the phenomenon was electrical or merely mechanical.

A REPORT upon a Bill for the adoption of the metric system of weights and measures in the United States was recently submitted to the U.S. House of Representatives by the Committee on Coinage, Weights and Measures. The report recommends strongly that the Bill be passed and the use of the system made compulsory because of its international character, educational benefits and commercial advantages. The scientific world to-day enjoys the advantages of a universal system of weights and measures, and this fact has doubtless facilitated the development and spread of natural knowledge. With regard to the introduction of the system into a country, the experience of other nations has shown that the confusion and inconvenience caused by a change in the measures used in daily life are largely over-estimated. Finally, the committee remarks:—"It should be kept in mind that the metric system is just as capable of a binary subdivision as any other, although the advantages of such a division are only apparent in the most ordinary business transactions and for the first few subdivisions. After the adoption of the metric system, the use of the half and quarter metre and half and quarter kilogramme would be as common as our half and quarter dollar—smaller quantities would be expressed in decimals precisely the same as in the case of our money. In 1866, Congress legalised the metric system. From that time on it has been growing in favour and in practical use. It is here to stay, not only in scientific work, but in commerce and manufacturing. It is now used by about two-thirds of the people of the world. . . . . Your committee believe the time has come for the gradual retirement of our confusing, illogical, irrational system and the substitution of something better. The first step in this direction should be the introduction of the metric weights and measures into the departments of the Government. The use of these weights and measures will simplify their work. It will familiarise the people with them and encourage their application to the common affairs of life. Your committee have no doubt that the benefits to be derived will far more than compensate for such inconvenience and expense as may be involved in the change."

EXPERIMENTS with a system of wireless telephony are being carried out (according to the *Scientific American*) in America by Mr. Stubblefield. The results so far have been of a promising nature, conversation having been successfully transmitted over several hundred yards on land and several hundred feet on water. The system used is an earth-conduction one, and is, therefore, similar in principle to, though doubtless differing in detail from, many other wireless telephony systems which are being tried in various countries. We have had occasion to comment on these in NATURE from time to time during the past year. It cannot be said that the results which have as yet been obtained by any of the experimenters are of sufficiently striking value to justify the prediction of a great future before this method of communication. But it is evident that many inventors are attacking the problem, and it is likely, therefore, that something of practical utility may be developed by their efforts. It is easy to conceive of many circumstances in which an earth-conduction telephonic system, even of limited range, would be very valuable.

A PAPER on the accuracy of an improved form of silver voltameter, by Messrs. T. W. Richards and G. W. Heimrod, is published in the *Proceedings* of the American Academy of Arts and Sciences for April. The silver anode is suspended in a porous pot, which is itself hung inside the platinum crucible serving as kathode. The level of the nitrate solution inside the porous pot is kept slightly lower than that outside, and thus outward filtration of the anode liquid is prevented. The authors not only examined the accuracy of the voltameter, but made a valuable investigation of the effects of the various impurities likely to result from irregularities in the electrolysis or anode. As a result of this, and from the data furnished by the experiments with the porous pot voltameter, corrections are deduced for the determinations of the electrochemical equivalent of silver made by Lord Rayleigh and Mrs. Sidgwick, F. and W. Kohlrausch, Kahle, and Patterson and Guthe respectively. The corrected figures give a mean result of 0·0011175, none of the four individual values differing from this by more than 0·02 per cent. Hence the number of coulombs associated with one gram-equivalent of any electrolyte is 96,580.

A PAPER on the sensitiveness of the coherer, by E. R. Wolcott, appears in No. 51 of the *Bulletin* of the University of Wisconsin. The experiments were carried out with coherers of two pieces of metal in light contact, as it was found that these gave more consistent results than "filings" coherers. Different metals were tried, and also the effect of coating different metals with a film of the same substance, such as collodion. The author concludes that both the metal and the coating affect the sensitiveness. Aluminium was found to be the most regular in response, but nickel showed the lowest critical potential, that is to say, responded to the least energy; this probably accounts for its value in long-distance wireless telegraphy. The author examines his results with reference to the theories of the coherer's action put forward by Branly, Lodge, Bose, and Guthe and Trowbridge. Guthe and Trowbridge's theory explains more of the phenomena than do any of the others, though all the observed facts are admissible on Lodge's theory. Some of the facts, it is said, are in disagreement with the theories advanced by Branly and Bose.

DR. C. DIENER contributes to the *Jahrbuch der k.-k. geol. Reichsanstalt* (Band li. Heft 2) an appreciative article dealing with the scientific work of Albrecht von Krafft, whose untimely death in September last year brought to an end a career of great promise. Dr. von Krafft had already earned his reputation as an able geologist while occupied on the Geological Survey of Austria, previous to joining the staff of the Geological Survey of India in 1899. In that year, and subsequently, he accomplished brilliant work in the Himalayas, and showed himself to be exceptionally well qualified for the difficult tasks allotted to him. His early death at the age of thirty has caused the profoundest regret in geological circles.

THE Royal Meteorological Institute of the Netherlands has issued its fifty-first year-book, containing observations for 1899. This is the first volume of a new series, in which the results are presented in the form adopted by the International Meteorological Committee, and is a great improvement upon the form in which the observations have hitherto been published.

MR. MAXWELL HALL has published a paper (No. 275) on the temperatures of Kingston, Jamaica, for the years 1881–98. The annual mean is 78°·8, highest maximum 96°·7, in August 1891, lowest minimum 56°·7, in December 1887. The lowest mean maxima occurred in 1884 and 1893, near the times of the sun-spot maxima, and the highest in 1889, at the time of the sun-spot minimum, and these effects are reproduced in the mean temperature column. A table is also given showing the rainfall in Jamaica from about ninety stations between 1866 and 1900; the greatest fall was 90·6 inches, in 1886, and the least 45·2 inches, in 1872.

MR. R. SWORDY sends us a few particulars of a somewhat remarkable shower of hailstones which fell in Cheltenham and the surrounding district on June 7, shortly before noon. At first the hailstones were more or less round and like small crystallised raspberries; but during the latter and main part of the shower they were in the form of wedges or small cones, somewhat varied in shape. Many of these hailstones were about three-quarters of an inch in height and measured about half an inch across. Mr. Swordy suggests that these were only conic sectional parts of what had been much larger hailstones. To test this view he put some selected ice cones in a circle and added two more layers upon the first circle and a key wedge or cone at the top. By this arrangement he obtained half an ice-ball, consisting of fifteen sections. The hailstones when first formed may therefore have been about the size of "ping-pong" balls, and about an inch and a half or two inches in diameter. Mr. Swordy adds:—"The grain of the ice in these sections (which, I presume, had formed the balls originally) radiated from the centre towards the outside, and were hardest on what I suppose had been the outside; so that it is probable that the freezing, which must have commenced from the outside of each water globule and progressed towards the centre, thus bringing pressure to bear on the centre of each ball, may have caused them to explode and form the cones mentioned."

IN a note on "mathematical meteorology," Prof. Luigi de Marchi contributes to the Lombardy *Rendiconti* an investigation of the equations of motion of air-currents due to variations of temperature, with especial reference to the effect of solar eclipses. The action of an eclipse, it is pointed out, is to produce what Mr. Helm Clayton has called a cyclone with a cold centre.

WE have received from Messrs. A. E. Staley and Co. a copy of the fourth edition of "Manipulation of the Microscope," by the well-known optician, Mr. Edward Bausch. It is a small illustrated handbook specially designed to meet the wants of beginners, and the sections dealing with the use and care of the microscope have been reprinted for distribution in class-rooms and laboratories.

NO. 182 of the *Bulletin* of the French Physical Society contains a note on a new "electric valve" for transforming reciprocating currents into direct currents, due to M. Nodon. This "valve" is based on the property, discovered by Buff in 1857, that an aluminium electrode plunged in an electrolyte offers a great resistance to the passage of a current in which it is the anode. The efficiency of M. Nodon's apparatus, as measured by a wattmeter, reaches 75 to 80 per cent.

AN oxy-acetylene blowpipe is described by M. Fouché in the *Bulletin* of the French Physical Society, No. 182. The flame is formed by the combustion of a mixture of one part of acetylene to 1·8 of oxygen, and in order that the explosion may not travel back into the blowpipe a jet velocity is required due to the pressure of a water column 4 metres in height. The flame melts most metals readily; it will solder iron and steel, and even silica and lime are melted by it. With a reduction of the proportion of oxygen the flame becomes luminous, and on falling on lime the free carbon goes to form carbide of lime.

IN the *Rendiconto* of the Naples Academy, viii. 2, Signor E. Cesàro deals with certain limitations of constants in the analytical theory of heat. His investigation refers to the property that in order to satisfy the partial differential equation $\nabla^2 u + ku$ throughout a given region S, subject to the boundary condition $du/dn + hu = 0$ at the surface of S, the constant k must for a given value of h belong to a discrete series of positive quantities, which all increase with h. The author also discusses the question of the expansion of the temperature due to an initial distribution in a series of functions of the form considered.

PROF. LE NEVE FOSTER has given a useful practical address on the study of mineral veins (*Trans.* Royal Geol. Soc. Cornwall, vol. xii. part vii.). Mr. J. B. Hill, in dealing with the relation of the plutonic and other intrusive rocks in west Cornwall to the mineral ores, expresses the opinion that the intrusion of the greenstones was separated by no great interval from the irruption of the granites, and that the copper and tin lodes originated in pre-Triassic times and followed closely on the cooling of the intrusive rocks.

A *Bulletin* issued by the U.S. Department of Agriculture concerning Kentucky bluegrass seed affords a striking instance of the amount of trouble which Americans will take to improve a product of comparatively trifling value. The cultivation of bluegrass is confined to a small area in the States of Kentucky, Missouri and Iowa. The harvesting is performed entirely or partially by hand, as automatic strippers do not seem to find favour.

THE latest number of the *Journal* of the Royal Horticultural Society completes the twenty-sixth volume. Two articles of an economic nature suggest to fruit-growers the possibility of making a profit out of surplus fruit. Mr. Austin claims to have devised a practical and efficient method of putting up fruit in bottles, while Mr. Udale brings forward the results obtained by drying fruits and vegetables in special evaporators. There is no apparent reason why the British farmer should not take up these industries and possibly oust imported articles. Captain Hurst having made a study of the characters of certain orchid hybrids, finds that they confirm the laws evolved by Mendel as the outcome of his experiments in hybridisation.

THE Report of the Zoological Society of Philadelphia for 1901 shows that the institution is in a flourishing condition. It is satisfactory to learn that the educational value of the menagerie is fully realised by the public schools of the city, which are in the habit of sending parties of scholars accompanied by teachers.

WE have received a copy of the second edition of the excellent little manual of the fauna and flora of Haileybury, issued by the Haileybury Natural Science Society under the supervision of Mr. F. W. Headley. The compilation and publication of similar local lists may be recommended to all school societies of a like nature.

IN the *Verhandlungen* of the Natural History Society of Prussian Rheinland, &c., for 1901, Dr. O. Follmann describes and figures an interesting new type of crinoid from the "Coblenzschichten" under the name of *Hystricrinus schwerdii.* To the same journal Herr Leverkus-Leverkusen, of Bonn, contributes an account of the present and past distribution of the elk.

The Country for June contains several interesting and well-illustrated articles on subjects connected with natural history and domesticated animals. Mr. W. F. Kirby, for instance, writes on common garden insects, while Mr. Harrison Weir discourses on the old English game-fowl, and Mr. Edwin Brough, of Scarborough, the well-known breeder of bloodhounds, describes some of the characteristic traits of his favourites.

AN important account of the ascidians of the Bermudas, by Dr. W. G. van Name, appears in the January and February issues of the *Transactions* of the Connecticut Academy (vol. xi.). The seas around these islands are remarkably rich in ascidians, and since but little has previously been done in the way of collecting, the writer has been able to describe quite a number of new types, both generic and specific. The memoir is illustrated by several plates.

ACCORDING to *Nature Notes* for June, the Society for the Protection of Birds has just issued the regulations and conditions for the first annual competitions open to elementary schools in the East Riding of Yorkshire and in Berkshire for challenge-shields and prizes in connection with "bird and tree day." The day is to be in November—probably the 8th—and essays are to be sent in during September. Any bird killed, or any eggs or nests taken for the purposes of the competition, will disqualify not only the actual offender, but all his fellow-scholars.

AT an egg-sale recently held at Mr. Stevens's auction rooms, Covent Garden, a moa's egg from New Zealand, reputed to be the finest in existence, was offered. Since, however, it did not reach the reserve price of 200*l*. it was withdrawn. Another example was sold some years ago for 250*l*. Thirty-eight guineas was the sum realised by the largest known egg of the extinct "roc" (*Æpyornis maximus*) of Madagascar; while two eggs of the pectoral sandpiper—the first of their kind ever offered in England—fetched 8*l*. 18*s*. 6*d*.

THE insect-enemies of the pine in the Black Hills Forest Reserve form the subject of *Bulletin* No. 12 (second series) of the Entomological Division of the U.S. Department of Agriculture. According to the author, Dr. A. D. Hopkins, the forests of rock-pine in the district in question have suffered very severely of late years from insect-ravages, the dying or dead trees covering large areas. The primary cause of the mischief is a small bark-burrowing beetle of a species hitherto undescribed, for which the name *Dendroctonus ponderosa* is suggested. After the first attack by this species, several other insects aid in the work of destruction. Various remedies are suggested by the author.

THE *Eastern Morning News* of June 3 contains an account of the reopening, by the Mayor, of the museum at Hull, which was some time ago taken over by the Corporation from the Literary and Philosophical Society. Since the transference, the contents of the museum have been thoroughly overhauled and rearranged by the curator, Mr. T. Sheppard, who has introduced order and system where chaos formerly held sway. The value of the exhibits is estimated at considerably more than 5000*l*.; many specimens of interest cannot, however, be shown for lack of proper cases. At the opening ceremony it was announced that the fine collection of British birds' eggs formed by the late Mr. J. Swailes had been presented to the museum by his brother, Mr. G. Swailes. In the rearrangement of the collections the educational value of the museum has been specially borne in mind.

A LECTURE on the natural history of the Chatham Islands, delivered by Dr. A. Dendy on March 4, is reported at length in No. 12 of vol. xlvi. of the *Manchester Memoirs.* Chatham Island and the adjacent Pitt Island appear to have once formed a portion of New Zealand, and are of especial interest as being the home of the Moriori, a race nearly exterminated by their cousins the Maori between 1835 and 1840. After giving a brief sketch of the flora of the islands, the author turns to the fauna, which, as might be expected, is nearly akin to that of New Zealand. Especially noticeable is the number of flightless birds, most of which are in danger of extermination owing to the introduction of predatory mammals.

TOTEMISM is a blessed word, and there is a real danger at the present time that any animal cult may be relegated in an off-hand manner to totemism. The very careful study of the relations between men and animals in Sarawak by Drs. Charles Hose and McDougall in vol. xxxi. of the *Journal* of the Anthropological Institute (p. 173) is, therefore, especially welcome, as it is the result of many years of observation on the part of one of the authors among most of the important peoples of Sarawak.

NO less than 150 periodicals and publications of scientific and technical societies are now regularly abstracted in *Science Abstracts*, so that the magazine takes a comprehensive view of progress in physical sciences and their applications. Among recent additions to publications abstracted are several Russian, Danish, Dutch, Norwegian and Swedish journals which are only accessible to a limited circle of readers, though many important papers are published in them. The abstracts will enable workers in physics and physical chemistry to keep in touch with practically every advance in their subjects.

SCIENCE is represented in the *Fortnightly Review* for June by two popular articles—one by Mr. Marconi, on "The Practicability of Wireless Telegraphy," and the other by Mr. Carl Snyder, on "Dr. Loeb's Researches and Discoveries." Beginning with the message sent in June, 1898, by Lord Kelvin "commercially paid at Alum Bay for transmission through ether" to Sir George Stokes at Cambridge, an account is given by Mr. Marconi of the messages since sent, without wires, from the Royal yacht, in connection with the international yacht race, and the United States Navy trials. Mr. Synder describes and interprets the work accomplished by Dr. Loeb at Chicago University in the domain of chemical physiology, and that on which Dr. Matthews is engaged in the same institution in connection with nerve functions.

VOL. xl. of the *Zeitschrift für physikalische Chemie* contains a publication, by C. Benedicks, on the electrical conductivity of steel and pure iron, the investigation of which has given some very interesting results. It is shown that equivalent quantities of different elements, when dissolved in iron, increase the electrical resistance by the same amount. This is proved experimentally in the case of carbon, silicon, manganese and phosphorus, the increase of the resistance for one dissolved atom per one hundred atoms of the solution being 5·9 micro-ohms per cubic centimetre. The presence of carbide in the iron has, on the other hand, very little influence on the resistance. From the electrical data certain conclusions have been drawn which are no doubt of considerable importance for the chemistry of steel and iron.

MESSRS. LONGMANS, GREEN AND CO. have just published new editions of two well-known works of science—Ganot's "Physics" and Schäfer's "Essentials of Histology." Dr. Atkinson's translation of Ganot's "Éléments de Physique" has long been accepted as a standard description of the groundwork of physical science, and the sixteenth edition, edited by Prof. A. W. Reinold, F.R.S., will increase the high reputation the book has gained. Though physical science, even in its most elementary stages, needs to be studied practically to be of any value, the results obtained in the laboratory can only be fully understood by considering them in relation to the investigations of makers of scientific history. The best instruction in physics is that which combines a course of practical work with such exact and philosophical descriptions as are found in Ganot's book. Practice without knowledge of theory is as bad as theory without practice. Prof. Reinold has added new matter, as well as revised the book, with the result that a comprehensive view is given of fundamental physical principles and relationships as now understood, suitable for elementary students of the science. The sections on magnetism and electricity have been greatly altered, and accounts of apparatus and machines which have ceased to be of interest have been omitted. Prof. E. A. Schäfer's "Essentials of Histology, Descriptive and Practical, for the Use of Students" has reached its sixth edition. The work has been greatly enlarged, the chief additions being in the text relating to the structure of the central nervous system. Many new illustrations have also been added. The volume is both an elementary text-book of histology and a practical manual giving students precise directions for the microscopical examination of the tissues.

THE additions to the Zoological Society's Gardens during the past week include two Cape Zorillas (*Ictonyx zorilla*) from South Africa, presented by Capt. W. B. White; a Red-footed Ground Squirrel (*Xerus erythropus*) from West Africa, presented by Mr. P. G. Knight; a Ruddy Finch (*Carpodacus erythrinus*) from Siberia, presented by Mrs. G. A. Way; two Mountain Ka-Kas (*Nestor notabilis*) from New Zealand, presented by Dr. W. H. Hornibrook; two European Pond Tortoises (*Emys orbicularis*), European, presented by Mr. E. C. Brown; two and three Moloch Lizards (*Moloch horridus*) from Australia, presented respectively by Mr. F. Richards and Mr. W. Nichols; a Common Viper (*Vipera berus*), British, presented by Mr. E. Ball; two Striated Babblers (*Aryga earlii*), a Roofed Terrapin (*Kachuga tectum*) from India, two Blyth's Nicobar Parrakeets (*Palaeornis caniceps*) from the Nicobar Islands, two Black Iguanas (*Metopoceros cornutus*) from the West Indies, a Royal Python (*Python regius*) from West Africa, a Corn Snake (*Coluber guttatus*) from North America, deposited; a Banksian Cockatoo (*Calyptorhynchus banksii*) from New South Wales, purchased; a Thar (*Hemitragus jemlaica*) born in the Gardens.

THE ROYAL OBSERVATORY VISITATION.

ON Saturday last the Board of Visitors made their annual visit to Greenwich, and the Astronomer Royal submitted his report for the past twelve months.

It cannot be said, however, that the weather was all that could be desired for such an occasion and for this time of the year.

The following is a brief *résumé* of the report:—

Transit-Circle.

With this instrument the usual observations have been made, the undermentioned table giving the details of the number involved.

Transits, the separate limbs being counted as one observation	11,133
Determinations of collimation error	303
Determinations of level error	663
Circle observations	9,666
Determinations of nadir point (included in the number of circle observations)	681
Reflection observations of stars (similarly included)	505

The number of stars observed in 1901 was 4,327.

Good progress seems to have been made in the observations of the reference stars for the astrographic plates, for which 10,000 stars are to be observed three times above and twice below pole—with the exception of about 1000 stars fainter than the ninth magnitude which cannot be observed below pole. A table giving the details of the progress up to date shows that for each of the five degrees of N.P.D. reckoning from the pole, 100, 90, 46, 46, and 45 per cent. respectively of the necessary observations have been secured.

The change in the method of adopting the azimuth error introduced at the beginning of 1900 has effected a satisfactory diminution of the small discordance in right ascensions taken on opposite sides of the pole.

The colatitude of the transit-circle as found from observations of about 581 stars in 1901 is 38° 31′ 21″·76, differing by −0″·14 from the adopted value. The values of this correction since 1897 are—

1897 ...	−0″·17	1900 ...	−0″·10
1898 ...	−0·15	1901 ...	−0·14
1899 ...	−0·14		

Very satisfactory progress has been made with the reduction of Groombridge's observations, the three years 1809, 1810 and 1811 with 10,500 observations of R A. and N.P.D. having been finished since the last report. A catalogue of the positions of the stars in the *Berliner Jahrbuch* derived from Groombridge's observations from 1806–1810 was forwarded to Dr. Auwers for use in the preparation of his fundamental catalogue, and he found that a large increase in accuracy had been effected by the re-reduction.

The Altazimuth.

Through the frequent breaking of the spider lines in this instrument, the micrometer slides have been altered to reduce the span, and the result has been very satisfactory. The instrument has been used in the meridian in four positions as a reversible transit-circle for observations of sun, moon, planets, and fundamental stars, and also for observation of the Eros reference stars, and reference stars for Sir David Gill's heliometer observations of major planets. The total number of observations made was 6556.

Further determinations of the division errors have been completed, and these have been combined with the previous results and definitive corrections for division error deduced.

The Reflex Zenith Tube.

This instrument was, as is well known, originally designed by Sir G. B. Airy for the purpose of determining the constant of aberration by observations of γ Draconis, which passes very near the zenith of Greenwich, but after many years of observations it was found that the results for parallax of γ Draconis and aberration were anomalous, and an attempt was made in the years 1882 to 1886 by a long series of transits over the wires to refer these discordances to temperature effects, but without success. The observations of zenith distance of γ Draconis were, however, continued up to 1899, when they were dropped owing to the pressure of observations for the new Ten Year Catalogue. This instrument has, however, become of great importance, for Mr. Chandler has recently shown that the apparently anomalous results previously obtained are explained by the variation of latitude, and that this instrument is specially adapted to the determination of the amount of this variation.

It has therefore in consequence been decided to resume the observations of γ Draconis without delay, and to observe such other stars as passed near enough to the zenith and were sufficiently bright. By suitable modifications it has been found possible to increase the utility of the instrument, by which several other stars down to the seventh magnitude can be observed.